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## (54) DISPLAY METHOD OF DISPLAY DEVICE

### (57)Abstract:

PROBLEM TO BE SOLVED: To provide a display method for a display device enabling a user to easily recognize changeover of display of information even at the time of switching and displaying a plurality of pieces of information.

SOLUTION: The display device 7 is provided with a display part 7a for displaying a plurality of pieces of information and an operation means 5 for selecting information to be displayed at the display part 7a. In the display method of the display device 7; at the time of switching the display of first information (first operation menu part) 10 to the display of second information (second operation menu part) 11 corresponding to an operation of the operation means 5, the display is gradually switched from a prescribed changeover start position of the display part 7a in a predetermined direction.

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## CLAIMS

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[Claim(s)]

[Claim 1] The method of presentation of the display characterized by to carry out change actuation of the display gradually toward the direction defined beforehand from the predetermined change starting position of said display in case it has the display which displays two or more information, and an actuation means choose the information displayed on said display and changes from presenting of the first information to presenting of the second information according to actuation of said actuation means.

[Claim 2] The method of presentation of the display according to claim 1 characterized by carrying out change actuation of the display gradually toward the direction defined beforehand from a different location from said change starting position in case it changes from presenting of said second information to presenting of said first information according to actuation of said actuation means.

[Claim 3] The method of presentation of the display according to claim 1 characterized by carrying out change actuation so that presenting of said second information may be gradually extended in the shape of a frame toward a way outside said viewing area from the center of abbreviation of the predetermined viewing area in said display in case it changes from presenting of said first information to presenting of said second information according to actuation of said actuation means.

[Claim 4] In case it changes from presenting of said second information to presenting of said first information according to actuation of said actuation means after change actuation ending from a display to presenting of said second information of said first

information. The method of presentation of the display according to claim 3 characterized by carrying out change actuation so that outside the limit [ said ] may be considered as presenting of said first information while narrowing presenting of said second information in the shape of a frame gradually toward the center of abbreviation of said viewing area from a way outside said viewing area.

[Claim 5] The display which is connected to information machines and equipment and displays two or more actuation menus of said information machines and equipment. It has an actuation means to choose said actuation menu displayed on said display. In case it changes from the display of the first actuation menu to the display of the second actuation menu according to actuation of said actuation means. The method of presentation of the display characterized by carrying out change actuation of the display gradually toward the direction defined beforehand from the predetermined change starting position of the viewing area which displays said actuation menu in said display.

[Claim 6] The method of presentation of the display according to claim 5 characterized by carrying out change actuation of the display gradually toward the direction defined beforehand from a different location from said change starting position of said viewing area in case it changes from the display of said second actuation menu to the display of said first actuation menu according to actuation of said actuation means.

[Claim 7] The method of presentation of the display according to claim 5 characterized by carrying out change actuation so that the display of said second actuation menu may be gradually extended in the shape of a frame toward a way outside said viewing area from the center of abbreviation of said viewing area in case it changes from the display of said first actuation menu to the display of said second actuation menu according to actuation of said actuation means.

[Claim 8] In case it changes from the display of said second actuation menu to the display of said first actuation menu according to actuation of said actuation means after change actuation ending from said actuation menu to said first actuation menu

[ second ] The method of presentation of the display according to claim 7 characterized by carrying out change actuation so that outside the limit [ said ] may be considered as the display of said first actuation menu while narrowing the display of said second actuation menu in the shape of a frame gradually toward the center of abbreviation of said viewing area from a way outside said viewing area.

[Claim 9] Said display is the method of presentation of a display given in any of claim 5 to claim 8 characterized by coming to have the display gestalt in which it comes to arrange said actuation menu in the shape of an abbreviation cross joint according to the array of said actuation means to have the actuation key arranged in the shape of an abbreviation cross joint they are.

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## DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the display in telecommunications systems, such as an electronic mail, a message, and navigation.

[0002]

[Description of the Prior Art] As an telecommunications system (information machines and equipment), the current position of a self-car is grasped and the navigation equipment which it shows to the route to the destination is known, for example. As such navigation equipment, while grasping the location of a self-car by the satellite spotting system (Global Positioning System (GPS)), there are some which tell the operator of a car about transit route information for a self-car to run based on the information from a vehicle information and communication system (Vehicle Information and Communication System (VICS)).

[0003] Moreover, in said navigation equipment, it has the expressway toll automatic payment function (Electronic Toll Collection (ETC)) to collect the toll in turnpikes, such as a highway, automatically, without through a help, and connects with pocket communication equipment, such as a cellular phone and PHS, and the proposal is made for displaying the receipt information of an electronic mail with a display. These telecommunications systems are indicated by JP,11-337348,A, JP,11-102198,A, etc.

[0004]

[Problem(s) to be Solved by the Invention] the navigation equipment mentioned above -- although the indicating equipment to kick chooses presenting of the information on an actuation menu etc. with the blind switch (actuation means) arranged by the steering of a car, when changing and displaying two or more information, it needs to perform the display a user can recognize it to be that presenting of said information was changed more easily.

[0005] Then, in case this invention changes and displays two or more information paying attention to said trouble, even if there is, it offers a display with a user able to recognize more easily that presenting of said information was changed.

[0006]

[Means for Solving the Problem] In order to solve said technical problem, in case this invention is equipped with the display which displays two or more information, and an actuation means choose the information displayed on said display and changes it to presenting of the second information from presenting of the first information according to actuation of said actuation means, it carries out the change actuation of the display gradually toward the direction defined beforehand from the predetermined change starting position of said display.

[0007] Moreover, in case it changes from presenting of said second information to

presenting of said first information according to actuation of said actuation means, change actuation of the display is gradually carried out toward the direction defined beforehand from a different location from said change starting position.

[0008] Moreover, in case it changes from presenting of said first information to presenting of said second information according to actuation of said actuation means, change actuation is carried out so that presenting of said second information may be gradually extended in the shape of a frame toward a way outside said viewing area from the center of abbreviation of the predetermined viewing area in said display.

[0009] Moreover, it describes above, after change actuation ending from a display to presenting of said second information of said first information. Again In case it changes from presenting of said second information to presenting of said first information according to actuation of an actuation means, while narrowing presenting of said second information in the shape of a frame gradually toward the center of abbreviation of said viewing area from a way outside said viewing area Change actuation is carried out so that outside the limit [ said ] may be considered as presenting of said first information.

[0010] Moreover, the display which is connected to information machines and equipment and displays two or more actuation menus of said information machines and equipment, It has an actuation means to choose said actuation menu displayed on said display. In case it changes from the display of the first actuation menu to the display of the second actuation menu according to actuation of said actuation means Change actuation of the display is gradually carried out toward the direction defined beforehand from the predetermined change starting position of the viewing area which displays said actuation menu in said display.

[0011] Moreover, in case it changes from the display of said second actuation menu to the display of said first actuation menu according to actuation of said actuation means, change actuation of the display is gradually carried out toward the direction defined beforehand from a different location from said change starting position of said viewing area.

[0012] Moreover, in case it changes from the display of said first actuation menu to the display of said second actuation menu according to actuation of said actuation means, change actuation is carried out so that the display of said second actuation menu may be gradually extended in the shape of a frame toward a way outside said viewing area from the center of abbreviation of said viewing area.

[0013] Moreover, in case it changes from the display of said second actuation menu to the display of said first actuation menu according to actuation of said actuation means after change actuation ending from said actuation menu to said first actuation menu [ second ] While narrowing the display of said second actuation menu in the shape of a frame gradually toward the center of abbreviation of said viewing area from a way outside said viewing area, change actuation is carried out so that outside the limit [ said ] may be considered as the display of said first actuation menu.

[0014] Moreover, said display comes to have the display gestalt in which it comes to arrange said actuation menu in the shape of an abbreviation cross joint according to the array of said actuation means to have the actuation key arranged in the shape of an abbreviation cross joint.

[0015]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained based on an accompanying drawing. In addition, the display of the navigation equipment (information machines and equipment) which has the compound function which can display the information about transmission and reception of VICS information, an electronic mail, etc. as a display shown below is mentioned as an example, and is explained.

[0016] The whole navigation equipment configuration is explained using drawing 1. Navigation equipment A mainly consists of the GPS electric-wave receive section 1, the VICS electric-wave receive section 2, the e-mail receive section 3, the UHF/VHF electric-wave receive section 4, an actuation means 5, a control section 6, and a display 7.

[0017] The GPS electric-wave receive section 1 has a receiving antenna for GPS, amplifies the transmitted electric wave which is the positional information from the satellite received with said receiving antenna as a RF signal, and supplies a control section 6.

[0018] The VICS electric-wave receive section 2 has the receiving antenna and light sensing portion for VICS, amplifies the transmitted electric wave which is the transit root information from VICS Center which received by the transmitted electric wave which is the transit root information from VICS Center which received with said receiving antenna, and said light sensing portion, and supplies a control section 6.

[0019] The e-mail receive section 3 has a modem, and telephone equipments, such as a cellular phone and PHS, are connected to said modem. Moreover, the e-mail receive section 3 has the e-mail processing section, performs recovery processing (generation of the sender's address data, dispatch time data, title data, these data, etc.) of the electronic mail data which consists of text data which received by said e-mail processing section, and supplies said text data to which it restored to a control section 6.

[0020] The UHF/VHF electric-wave receive section 4 has a receiving antenna for UHF/VHF, and it supplies this video signal to a display 7 through a control section 6 while it changes into a video signal the transmitted electric wave which is the image information received with said receiving antenna.

[0021] The actuation means 5 consists of a blind switch arranged by the steering of a car, chooses the actuation menu in which the function of the navigation equipment A explained in full detail later is shown, or displays various information, such as root retrieval and root retrieval information, with a display 7. Moreover, the actuation means 5 has the enter key which opts for selection of the item in which the cursor

key to which the location of the cursor which is displayed with a display 7, and which is mentioned later is moved, and said cursor are located, and said cursor key is arranged so that it may become abbreviation cross joint-like focusing on said enter key.

[0022] A control section 6 consists of a microcomputer, carries out map matching of the location data received by the GPS electric-wave receive section 1, and the map data memorized by storages, such as CDROM and DVD, and displays the location of a self-car on the map displayed on a display 7. Moreover, a control section 6 controls audio equipment, such as radio arranged by said car, a CD player, and MD player, according to actuation of the actuation means 5, and controls each function, such as volume control and delivery return of music. Moreover, a control section 6 controls a switch of the display gestalt of a display 7 according to the input from the various information and the actuation means 5 from each receive sections 1, 2, and 3 while memorizing the control program for performing the method of presentation by the display 7 mentioned later.

[0023] A display 7 is equipped with the display which consists of a matrix mold liquid crystal display component and which is mentioned later, and the drive circuit for operating said liquid crystal display component according to the indication signal from a control section 6, and displays the display gestalt mentioned later on this display according to directions of a control section 6.

[0024] Navigation equipment A is constituted by the above each part.

[0025] Next, the method of presentation of a display 7 is explained using drawing 2 and drawing 3.

[0026] Drawing 2 shows the first display gestalt as which the first actuation menu section (first actuation menu) 10 of navigation equipment A is displayed on display 7a of a display 7 according to the input of the actuation means 5.

[0027] The first actuation menu section 10 is equipped with said actuation menu for choosing the function with which navigation equipment A was equipped, and sets it in the gestalt of operation of this invention. Actuation menu 10for audios a which shows the function to operate said audio equipment, and said telephone equipment connected to navigation equipment A are minded. The current position of actuation menu 10for cellular phones b which shows the function which transmits and receives a message, an electronic mail, etc., actuation menu 10for television c which shows the function to which television imagery is displayed on display 7a, and a self-car is grasped. It has actuation menu 10e for menu return which returns the display in actuation menu 10d for navigation and display 7a which show the navigation function which it shows to the root to the destination to the display of an initial screen.

[0028] Moreover, the first actuation menu section 10 makes actuation menu 10e for menu return the center of abbreviation, and actuation menu 10for audios a, actuation menu 10for cellular phones b, actuation menu 10for television c, and actuation menu 10d for navigation are arranged in the shape of an abbreviation cross joint.

[0029] In said first display gestalt, the actuation menu specified by cursor 7b by actuation of the actuation means 5 is changed into a positive display from the negative display which is usually a display at the time, and a control section 6 displays it. In drawing 2, the condition that actuation menu 10a for audios was specified by cursor 7b is shown.

[0030] Drawing 3 shows change actuation of the display which changes the display of the first actuation menu section 10 to the display of the second actuation menu section (second actuation menu) 11 according to having opted for selection of said actuation menu of the first actuation menu section 10 by said enter key of the actuation means 5.

[0031] A control section 6 makes the order of drawing 3 (a) -> drawing 3 (b) -> drawing 3 (c) carry out change actuation of said first display gestalt in drawing 2, when selection of actuation menu 10a for audios is determined by said enter key of the actuation means 5. The center of abbreviation of the viewing area B which displays the first actuation menu section 10 for said first display gestalt shown in drawing 2 is changed. Namely, as a starting position It is made to change to the second display gestalt which displays the second actuation menu section 11 shown in drawing 3 (c) by carrying out change actuation of the display of the second actuation menu 11 toward a way, outside a viewing area B, so that it may be gradually opened in the shape of a frame, using a frame 12 as a boundary line. In addition, "the way outside a viewing area B" here points out the display boundary line C of a viewing area B. Moreover, a frame 12 may be a configuration displayed on display 7a with change actuation of a display, and may be a configuration made non-display.

[0032] The 2nd actuation menu section 11 responds to selection of said actuation menu in the first actuation menu section 10. Have said actuation menu for choosing the function subordinate to said selected actuation menu, and it sets to drawing 3 (c). Actuation menu 11 for volume control a which is the actuation menu in which the function subordinate to actuation menu 10a for audios of the first actuation menu section 10 is shown, actuation menu 11 for delivery return b, and actuation menu 11c for playback, The condition that actuation menu 11d for menu return which returns the display of the second actuation menu section 11 to the display of the first actuation menu section 10 was displayed is shown.

[0033] Moreover, the second actuation menu section 11 makes actuation menu 11 for playback c, and actuation menu 11d for menu return the center of abbreviation, and actuation menu 11 for volume control a and actuation menu 11b for delivery return are arranged in the shape of an abbreviation cross joint.

[0034] In said second display gestalt, said actuation menu specified by cursor 7b by actuation of the actuation means 5 is changed into a positive display from the negative display which is usually a display at the time, and a control section 6 displays it. In drawing 3, the condition that actuation menu 11d for menu return was specified by cursor 7b is shown.



[0035] Moreover, a control section 6 makes the order of drawing 3 (b) -> drawing 3 (a) -> drawing 2 carry out change actuation of said second display gestalt in drawing 3 (c), when actuation menu 11d for menu return is chosen and selection is determined by said enter key, after change actuation ending from the actuation menu section 10 to the first actuation menu section [ second ] 11. Namely, outside a viewing area B, gradually, while indicating a boundary line 11d of second actuation menu section for a frame 12 toward the center of abbreviation of a way to the viewing area B and narrowing said second display gestalt shown in drawing 3 (c) in the shape of a frame It is made to change to said first display condition shown in drawing 2 by carrying out change actuation so that an indication besides the frame 12 of a viewing area B may be given to the display of the first actuation menu section 10.

[0036] In case the method of presentation of this display 7 is changed from the display of the first actuation menu section 10 to the display of the second actuation menu section 11 according to actuation of the actuation means 5, it carries out change actuation of the display gradually toward the direction defined beforehand from the predetermined change starting position of the viewing area B which displays the actuation menu section. Moreover, by making especially the center of abbreviation of a viewing area B into said change starting position, change actuation is carried out so that the display of the second actuation menu section 11 may be gradually extended in the shape of a frame toward a way outside a viewing area B. Since it can recognize that the change of a display was performed when a display 7 checked said change actuation by looking, in case two or more information is changed and displayed, even if it is with the above-mentioned method of presentation, a user becomes possible [ recognizing more easily ] about presenting of said information having been changed.

[0037] Moreover, in case the method of presentation of a display 7 is changed from the display of the second actuation menu section 11 to the display of the first actuation menu section 10 according to actuation of the actuation means 5, it carries out change actuation of the display gradually toward the direction defined beforehand from a different location from said change starting position of a viewing area B. Moreover, while narrowing [ especially ] the display of the second actuation menu section 11 in the shape of a frame gradually toward the center of abbreviation of a viewing area B from a way outside a viewing area B, change actuation is carried out so that an indication in the viewing area B besides a frame 12 may be given to the display of the first actuation menu section 10. Since [ from change actuation of a display and the second actuation menu section 11 to the first actuation menu section 10 from the actuation menu section 10 to the first actuation menu section / second / 11 ] change actuation of a display can be distinguished, the above-mentioned configuration enables the change of a display to recognize easily the change to a lower layer from the upper layer, and the change to the upper layer from a lower layer.

[0038] Moreover, the method of presentation of a display 7 is doubled with the array

of an actuation means 5 to have said cursor key arranged in the shape of an abbreviation cross joint, and said enter key. It is what makes the display gestalt of the first actuation menu section 10 displayed on display 7a, and the second display actuation menu section 11 the display gestalt in which it comes to arrange said each actuation menu in the shape of an abbreviation cross joint. By considering the display gestalt of the first actuation menu section 10 in the array of the actuation key of the actuation means 5, and display 7a, and the second actuation menu section 11 as the same layout, it becomes possible to choose said each actuation menu more easily.

[0039] In addition, in the gestalt of operation of this invention, although the method of presentation at the time of changing and displaying the first actuation menu section 10 and the second actuation menu section 11 as two or more information displayed on a display was explained, in this invention concerning claim 4, said two or more information should just be changed and displayed on a single display from claim 1.

[0040] Moreover, although change actuation was carried out in the gestalt of operation of this invention by making the center of abbreviation of the viewing area B of the display-menu section into said change starting position so that the display of the second actuation menu section 11 might be gradually extended in the shape of a frame toward a way outside a viewing area B In this invention concerning claim 1, claim 2, claim 5, and claim 6 The direction which carries out said change starting position and change actuation may be a configuration in which it is not limited to the gestalt of operation of this invention, and said viewing area carries out change actuation gradually caudad from the upper limit section of a predetermined viewing area.

[0041] Moreover, in the gestalt of operation of this invention, in case it changes from the display of the second actuation menu section 11 to the display of the first actuation menu section 10 according to actuation of the actuation means 5 after change actuation ending from a display to the display of the second actuation menu section 11 of the first actuation menu section 10 Although change actuation was carried out so that an indication in the viewing area B besides a frame 12 might be given to the display of the first actuation menu section 10 while narrowing the display of the second actuation menu section 11 in the shape of a frame gradually toward the center of abbreviation of a viewing area B from the way outside the viewing area B In this invention concerning claim 2 and claim 6, change actuation should just be a configuration made to start from a different location from said change starting position at the time of the change actuation to the second information (or second actuation menu) from the first information (or first actuation menu).

[0042] Moreover, it doubles with the array of an actuation means 5 to have said cursor key arranged in the shape of an abbreviation cross joint, and said enter key in the gestalt of operation of this invention. Although it was the configuration which makes the display gestalt of the first actuation menu section 10 displayed on display 7a, and the second display actuation menu section 11 the display gestalt in which it

comes to arrange said each actuation menu in the shape of an abbreviation cross joint In this invention which relates to claim 8 from claim 1, the array of the actuation means 5 and the display gestalt in display 7a are not limited to the gestalt of operation of this invention.

[0043] In the gestalt of operation of this invention moreover, the first actuation menu section 10 As said actuation menu, although it came to have actuation menu 10for audios a, actuation menu 10for cellular phones b, actuation menu 10for television c, and actuation menu 10d for navigation, and actuation menu 10e for menu return Said actuation menu with which the first actuation menu section 10 is equipped in this invention which relates to claim 9 from claim 5 is not suitably changed according to the various functions with which equipment is equipped, and is not limited to the gestalt of the above-mentioned operation.

[0044] Moreover, in the gestalt of operation of this invention, although the configuration which carries out change actuation of the two information, the first actuation menu section 10 and the second actuation menu section 11, was explained, in this invention, the number of said information is not limited to the gestalt of operation mentioned above that the information by which it is indicated by change should just be plurality.

[0045] Moreover, although the display 7 of navigation equipment A was mentioned as the example and the gestalt of operation of this invention explained it, it is effective in other telecommunications systems which have small viewing areas, such as a cellular phone and PHS.

[0046]

[Effect of the Invention] An actuation means to choose the display as which this invention displays two or more information, and the information which displays on said display, In case it changes from presenting of the first information to presenting of the second information according to actuation of a preparation and said actuation means It is what is characterized by carrying out change actuation of the display gradually toward the direction defined beforehand from the predetermined change starting position of said display. In case two or more information is changed and displayed, even if it is, a user becomes possible [ recognizing more easily ] about presenting of said information having been changed.

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## DESCRIPTION OF DRAWINGS

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[Brief Description of the Drawings]

[Drawing 1] The block diagram showing the indicating equipment of the gestalt of operation of this invention.

[Drawing 2] Drawing showing the first display gestalt of a display same as the above.

[Drawing 3] Drawing showing change actuation of a display of a display same as the above.

**[Description of Notations]**

A Navigation equipment

B Viewing area

C Display boundary line

5 Actuation Means

6 Control Section

7 Display

7a Display

7b Cursor

10 First Actuation Menu Section

10a The actuation menu for audios

10b The actuation menu for cellular phones

10c The actuation menu for television

10d Actuation menu for navigation

10e The actuation menu for menu return

11 Second Actuation Menu Section

11a The actuation menu for volume control

11b The actuation menu for delivery return

11c The actuation menu for playback

11d Actuation menu for menu return

12 Frame

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